AN IRRIGATION FEAT

A COLORADO DESERT IS TO BE MADE TO BLOOM.

To Do This a Tunnel Six Miles Long Must Be Cut Through the Mountains—A Government Project.

The greatest irrigation project ever undertaken by the United States government was begun recently near Montrose, Col. The reclamation service of the government proposes to divert the Gunnison river, which now runs through a canyon between walls of rock 3,000 feet high, though a tunnel almost six miles long, into the Uncompahgre valley, where 150,000 acres of arid lands will be rendered fertile by its waters. The difficulty of the project lies in the boring of the tunnel through the Vernal Mesa, the tableland that forms one side of the Grand canyon of the Gunnison and separates it from the Uncompahgre valley. There is nothing to equal it in the wonderful story of irrigation in America, and in American railroading only the Hoosic tunnel approches it in length.

The Uncompahgre valley lies in southwest Colorado and comprises parts of Montrose, Ouray and Delta counties. The valley, the river that divides it and the mountains that flank it were all named after the Uncompahgre Utes, the aborigines of this region.

The valley is about 30 miles long and averages nine miles in width. Some of it is now irrigated by the Uncompahgre river, but this tract comprises only about 10,000 acres, while there are 150,000 acres

GRAND CANYON OF THE GUNNISON

that the tunnel will be the means of reclaiming.

The supply of water from the Uncompahgre is only fair at best, but what it will do is shown about this town, which with a population of 1,200, is the largest in the valley. Here are fine orchards of apples, peaches and pears, yielding as high as $400 an acre. Further down the valley there are only alkali soil and sage brush, such as you will see for hours in crossing the desert.

In 1900 a party of residents of the Uncompahgre valley made the first investigation of the Gunnison as a source of water supply. They explored the canyon for 21 perilous days, and succeeded in getting only half way through it. The record of their journey is a succession of hairbreadth escapes.

They returned convinced that the project would be too costly to be practicable. Later, in 1900, there was a cursory investigation by the government, and in 1901 the first systematic survey was begun by A. L. Fellows, district engineer of the Reclamation service.

Mr. Fellows is the man to whom the Gunnison tunnel will owe its existence. He explored and surveyed the region for three years; found that the tunnel was feasible and selected two locations for it, of which that known as the upper location has been finally chosen.

The cost of constructing the tunnel Mr. Fellows estimated at $2,500,000. The next step was to secure the approval of the secretary of the interior and the necessary appropriation, which the passage of the national irrigation act in 1892 rendered possible.

Mr. Fellows says that it will take three years to complete the tunnel, of which two years will be devoted to boring and one year to concreting. The bore is through granite and shale, in about equal quantities.

The tunnel will be about 12 feet square and will have a fall of two feet in a thousand. Its length will be about 30,000 feet, approximately 5¾ miles. At the diverting point in the Gunnison, diversion gates will be constructed. There will also be provision for a forest reserve at the headwaters of the river, to insure the permanency of the supply.

Explaining the Popping.

She—And now they say that coal is a product of bacteria.

He—That's funny.

"What's funny?"

"Why, they say there is bacteria in kisses."

"Surely."

"Well, when a man is sitting in front of a coal grate with a girl, I suppose the bacteria has something to do with the popping?"—Yonkers Statesman.

Juvenile Theory.

"Nellie," said a mother to her five year-old daughter, "what's the reason you and your little brother can't get along without quarreling?"

"I don't know, mamma," replied the small miss, "unless it's 'cause I take after you and he takes after papa."—Cincinnati Enquirer.

Valor's Better Part.

"My wife's going to make biscuits to-day; won't you take dinner with me?"

"Thanks; I'm not trying for the Carnegie hero medal."—Houston Post.

USEFUL AND BEAUTIFUL FORESTS OF THE HAWAIIAN ISLANDS

They Are Valuable Both for the Products and Protection Which They Furnish.

THERE are two thoroughly distinct kinds of forest in the Hawaiian islands. One kind occurs near sea level, in the drier portions of the islands and is valuable on account of the timber and other products which it yields. The other kind is found on the mountain slopes, where the rainfall is heavy. It has little commercial, but high protective value. In no case do the two forests meet.

The forests which occur near sea level consist of a single species, and this introduced. It is the mesquite of the southwestern United States and

INTERIOR OF A LEHUA FOREST.

Mexico, and is called algaroba. The first algaroba tree in Hawaii grew from a seed planted in 1837 by Father Bachelot, founder of the Roman Catholic mission. This tree, which is about two feet in diameter and 50 feet tall, yet stands in thrifty condition at the corner of Fort and Beretania streets, Honolulu. It is the progenitor of at least 50 acres of forest, which is fairly well distributed over the different islands.

Situated as they are, the algaroba forests are more accessible than the other forests of the islands. Indeed, there are hundreds of cases where the forest has taken possesion of old feed lots and pastures on farms and sugar plantations, and even on vacant lots in towns. Some of the suburbs of Honolulu are thickly grown up with algaroba. The wood, which is valuable for fuel, sells at the plantations and in Honolulu for nine and ten dollars per cord. It lasts well in the ground when used as a fence post. Both fuel and fence posts are in such great demand that there is extensive cutting in these forests.

All of the five important islands are mountainous, their highest points ranging from 4,030 feet on Oahu to 13,760 feet on Hawaii, and all the mountains are to a considerable extent forested.

The native forests are distinctly of tropical character. None of the familiar trees of the north temperate zone are present. The observer looks in vain for oaks, maples, pines or spruces. There is one representative each of Sapindus, Sophora and Zanthoxylum, and two or three of Acacia, but all differ distinctly from their cogeners in the United States.

The forests are composed mainly of five distinct types: Pure growths of lehua, koa, mamane and kukui, and mixed forests, which are made up of koa, koaia, kopiko, kolea, naio, pua and other species.

The ohia-lehua, which forms pure stands or growths with a small admixture of koa, naio, kopiko and pua on all the different islands, is the typical forest of regions of very heavy rainfall, such as northeast slopes and mountain tops under 6,000 feet elevation. It com-

A HAWAIIAN KOA FOREST.

prises probable three-fourth of the native forest.

The lehua of itself seldom forms a dense stand. The trees are apt to grow far apart, and always have a small, thin, upright crowns, which are very intolerant of shade. Under varying conditions in the forest the trees grow from 30 to 100 feet high. In the best forests, which always occur where the rainfall is greatest, many of the trees reach a diameter of four feet, a height of 100 feet, and a clear length of 40 to 50 feet. The lehua trunk is straight, often twisted, deeply ribbed near the ground. The root system is very shallow, often spreading right on the surface of the mineral soil.

Though the stand of trees be thin, the normal forest, on account of an abundant and luxuriant undergrowth, is impenetrable except one cuts his way with knife and axe. Many of the trees supports climbers, such as the ie-ie vine, which grows into the crowns and may lace together with rope-like stems the various trees of an entire forest. Then there is the fern growth, marvelous in its variety and luxuriance. With species which range in height from a few inches to 30 feet, growing both on trees and on the ground and running the whole scale of shade endurance, the ferns do much toward making the virgin lerua forest the impenetrable, dark jungle which it often is.

Besides growing in mixture with lehua, koa forms pure stands over extensive tracts in Hawaii and Maui. Koa has a leaf which is almost indistinguishable from the Australian blackwood, which has been commonly planted in southern California and to which it is closely related botanically. It is naturally a spreading tree with a short trunk, growing in somewhat scattered stands. Occasionally under normal conditions it reaches a diameter of six or eight feet and a height of 75 feet. Much greater height than this is reported.

In crowded stands, the koa is forced into a long, slender, but seldom straight stem. It is intolerant of shade at all ages, and will not germinate or grow without a large amount of light. Koa also has the fern undergrowth which characterizes the lehua, though as it grows in somewhat drier situations its undergrowth is usually not so luxuriant. The ie-ie vine especially is seen in a koa forest.

Mamane grows successfully only on the high slopes of Mauna Kea and Hualalai. It originally extended down to an elevation of about 4,000 feet on the north slope of Mauna Kea, but was killed out at this elevation apparently by the encroachment of Bermuda grass. But little of it is now found except between 6,000 and 8,000 feet, at which elevation it forms a belt clear around Mauna Kea. In this situation it is notable for its rapid extension within

A MOUNTAIN RAVINE.

the last few years up and down the mountain.

Kukui, a handsome tree with large, silvery leaves, pointed like the leaves of the California sycamore, characterizes the bottoms and sides of gulches and streams to an elevation of 2,000 feet. It is frequently called candlenut, because of the oily nut which it produces in abundance, and which in olden times was used by the natives for illumination. The kukui has value only as a cover for the steep slopes where it grows. In almost all cases it has beneath it a dense undergrowth of fern. In very moist coves, protected from severe winds, the wild banana often forms a part of its undergrowth. Near the edges of streams the kukui is frequently supplanted by the ohia-ai, which, in small patches, forms the densest forest to be found in the islands.

Mixed forests of koa, koaia, kopiko, kolea, naio, pua and other species occur on nearly all the islands, particularly on portions too dry for the species above named to form pure forests. Thus, on approaching a forest area from a desert, one encounters first a mixed forest and afterwards a pure forest of some of the kinds mentioned.

"Ten Old Maids."

The story is told of a teacher of Indians at Hampton, Va., who was reading them the parable of the Ten Virgins by the aid of an interpreter; as she read, she noticed a furtive smile in the faces of her usually sober-visaged pupils, and, stopping to inquire the cause, discovered that, owing to the paucity of the Indian dialect, which made the same word serve for virgin and old maid, the story, as it was sifted down through the interpreter, was to the effect that "ten old maids lighted their lanterns and went out to look for husbands."—World's Work.

The Old Old Story.

The hour was growing rather late, still he and she hung on the gate. Said he, "My dear, you bet I hate to break away, but such is fate." Said she, "Well, we've another date to-morrow night, so let us wait." Their arms entwine—they osculate, and both declare 'tis great—then say "Good night!" and separate.—Cincinnati Enquirer.

A YOUNG BLACK BEAR

THE ANTICS OF JOHNNY WERE VERY INTERESTING.

Ernest Harold Baynes Tells of a Mischievous Little Present He Received—It Envinced Wonderful Intelligence.

About ten days ago I received by express a fair-sized box, from which issued a series of strange noises.

"Wow!" said something inside the box. "Wow! Wow! Wow!—Scratch, scratch, Uh!—Uh!—Wow!—Wow!—Wow!"

Naturally, I was interested, and hastened to read the inscription written upon a large card, which had been tacked to the top of the box. It ran as follows:

"Please water me and give me something to eat. But do not give me fruit or sweets, as it makes me sick. I like milk. I am for Ernest Harold Baynes (The Haven Cottage), Newport, N. H."

All this only heightened my curiosity, and, seizing a hammer and an old chisel, I quickly pried open a corner of the box. In an instant there was poked through the opening a little black head, with a tawny muzzle, thick, furry ears and small, dark eyes, and I realized that my guest was a baby black bear. The expression on his face was decidedly surly; the little chap was evidently greatly displeased at having been kept in such small quarters for more than 48 hours, and he grunted peevishly as he drew his sturdy little body out onto the lawn.

The housekeeper appeared with a large bowl of crackers and milk, and as soon as the little bear saw her coming he ran to meet her, and, without waiting for the food to be set down, he stood up on his hind legs, seized the rim of the bowl with his fore paws, and hoisted himself into it. Then he was set on the ground, with the food before him, and I don't believe that anything would have induced him to leave it. He lay flat on the grass, with his fore paws round the bowl, that it might not get away from him, and with his muzzle buried almost to the eyes in the crackers and milk.

A door closed simply with a spring he could open as well as I could. He would first pull it ajar with one of his fore paws, and then insert his muzzle. In the kitchen there is a screen door which closes with a spring in this way, and whether he had done the trick before or not, I don't know, but he knew how to open this door at once. At the front door there is another screen door, and it so happened that, while the kitchen door opens at the right, the front door opens at the left.

Here was a chance to test the little bear's knowledge of doors, so, when I saw that he was very anxious to enter the house, I latched the kitchen door and let him go around to the front. It was at once evident that he had had no experience with doors that opened at the left, for he devoted all his energies to the right-hand side, and for many minutes worked hard at the crack close to the springs and hinges. After he had given it up as a bad job, I brought him back and opened the door just an inch or two. In a moment he inserted his nose, and ever since he has been able to open that door as easily as the other one.

The morning after his arrival I took him out for a walk, and he followed me like a dog, making frequent excursions into the woods and the long grass which bordered the road. Every now and then he would dash up some big tree with surprising agility. Where there were no branches he advanced up the trunk by leaps, with fore paws wide apart and with hind paws near together. He always came down backwards, and with considerable caution, often looking below, either to see where he was going, or to find out how far he was from the ground. He was most inquisitive, examining everything we came to, from flowers and stones to old farmhouses, which he would enter with an air which suggested condescension.

By and by we came to a large stone watering trough, into which clear water bubbles from a spring. Of course the little bear had to examine that, so up the side he went, and, after taking a lap or two of the water, he deliberately slid right into it, and swam from end to end of the trough and back again. Then he descended to the road and galloped along as before. Presently a countryman driving to work, turned his horse toward the trough that it might drink. But the horse, although very thirsty, would not come near. So the trough had to be emptied and cleaned and filled again, after which the horse came up and drank as usual. Several horses have, at different times evinced a marked dislike to either the sight or odor of the little bear, though other horses will let him play around their feet without so much as raising their heads.

ERNEST HAROLD BAYNES

One Way to Get It.

Greening—I say, old man, what are you going to do with all those toy banks?

Browning—Going to present them to my children. The doctor says I need it.

Greening—Need what?

Browning—Change.—Cincinnati Enquirer.

Not to Be Fooled.

Mrs. Subbubs—I told Bridget to string the beans this morning.

Mr. Subbubs—Yes. Well?

Mrs. Subbubs—Well, she flared up and told me I couldn't string her; that we'd eat them loose or not at all.—Philadelphia Press.

Professional Jealousy.

"So you went to Dr. Pedal's piano recital, eh? Tell me, what do you think of his execution?"

"To be thoroughly frank with you, I think he thoroughly deserved it."—Brooklyn Life.

A FIRE CURTAIN SHUTTER.

Chicago Inventor Has Designed Unique Contrivance to Protect People from Flames.

It is the law in nearly every large city that all buildings over two stories in height must be provided with some approved form of fire escape. If it were necessary for occupants of a burning building to await the arrival of the ladders carried by the firemen many of them would perish before they could be reached, or in their torture would be forced to jump to the ground below. Hence, the wisdom of compelling owners of tall buildings to supply permanent ladders as a means of escape from the flames. In many instances, however, the fatal mistake has been made of placing these structures across win-

PROTECTS PEOPLE FROM FLAMES.

dows, and thus compelling those persons attempting to escape from a fire to pass directly through a sheet of flame pouring out of the opening made by the breaking of the glass. To avoid such an emergency as this a Chicago man has designed a steel curtain for use in conjunction with all fire escapes which must of necessity pass in front of windows. The idea is to so place the curtain that it will not obstruct the light which enters the window and will at the same time be ready to close the outlet the instant a fire breaks out and the necessity arises for using the fire escape. This curtain is hung in a folded position directly over the window and is suspended so that a slight touch by any person descending the fire escape will cause it to fall and shield the people from the flames.—Chicago American.

HUMAN AND ANIMAL ODORS

Europeans and Americans Have One Unenviable Trait Not Possessed by Orientals.

It is well known that various animals—notably the horse, dog and cat—have each a characteristic odor by which they can be recognized. Hunting dogs follow rabbits, hares, deer and other game by the sense of smell, which would be impossible but for this fact. The dog doubtless has a keener perception of odors than most other animals, because it will follow the trail of a particular person, though that of a dozen or a hundred other people cross it. There is reason to think that a dog identifies his owner or a friend more quickly with his nose than with his eyes.

A Japanese physician, Dr. Burtaro Adacki, declares that some human beings also have so keen a sense of smell that they can occasionally tell the nationality of a stranger thereby. He goes so far as to assert that Europeans as a class emit a faint but perceptible odor—an odor which he says is not altogether agreeable—and that his fellow countrymen quickly recognize it. The Chinese, too, are credited with possessing this perception. When a Chinaman or a Japanese first comes to live in Europe (and perhaps in America) he finds the odor almost intolerable, but in time he becomes accustomed to it. The yellow races do not appear to have any such unenviable physical trait themselves.

The opinion prevails that the odor by means of which dogs identify their masters proceeds from the man's perspiration, and that people of the most fastidious cleanliness can thus be recognized. It is likely that the smell to which Dr. Adacki refers has the same source and is affected by diet. It has been asserted that even among the white races observers who possess an acute sense of smell distinguish solely by this means those persons who follow a vegetarian regimen and those who eat meat, at times the difference between these two classes of persons being very marked. The individuals who nourish themselves on meat exhale, under the influence of the fermentation of cutaneous secretions, a much stronger odor than vegetarians. Experimenters in ethnography know that there exist provincial odors, the odor of Brunswick being different from that of Bavaria, that of Savoy different from that of Normandy.

The Japanese are chiefly vegetarians, and for this reason their skin exhales odors which are scarcely perceptible; but here clothing plays its role, for if we superimpose many layers of tissue closely around the body, perspiration is produced. The race and individual color may also have a certain influence, since brunettes, blondes and red-haired people are said to exhale very different odors of the body.

WORKINGS OF HUMAN MIND.

Experiments with the New N-Rays Result in Some Amazing Scientific Demonstrations.

All scientific Paris is discussing the recent remarkable researches made by Prof. Blondlot, and especially the extraordinary results of his experiments with the newly-discovered N-rays.

With the aid of these the professor has demonstrated that it is actually possible to look into and through the skull of a human being and witness the workings of the mind.

It is a matter perfectly simply, the instrument employed being nothing more complicated than a small rectangular piece of pasteboard, the size of a playing card, one end of which is spread with a paste of phosphorescent sulphate of calcium. This substance, it appears, is made luminous by the presence of rays of the "N" description.

When such a card in a darkened room is applied to a man's head it does some very remarkable things. The person under experiment is told to talk, and keeps on talking while the bit of pasteboard is brought into contact with various parts of his cranium. It shows no change until a certain area on the side of the head is reached, when, suddenly, the luminosity of the paste becomes greatly increased, and why? Simply because this is the area of brain service which controls vocal speech. In working it gives off a flood of N-rays which cause the sulphate of calcium to shine.

But this is not all. Prof. Blondlot has found that by passing the card slowly over the head and watching the variation of the luminosity he can outline with perfect accuracy the speech area of the brain surface.

When about a century ago Beichenbach, a scientist of high reputation, claimed that he could sometimes see a sort of aureole or halo about the heads of people in the dark, it was suggested that he was the victim of an hallucination, but it is possible that the phenomenon was due to an emanation of X-rays, which may, under certain circumstances, become visible to the eye.

WHAT SCIENCE TELLS US.

Left-Handed Children Should Not Be Discouraged in Following Dictates of Nature.

I have never seen anything but bad results from the attempt to train children to use the right hand instead of the left, when there is a decided tendency or habit to be left-handed. Moreover, the attempt is never successful. The best consequences are poor, and are only awkward mixtures of the two forms, which yield confusions and indecisions during the entire subsequent life. One is that of a naturally left-handed friend, who, by arduous and continuous training during his childhood was compelled to write with his right hand. For all other acts he is left-handed, but he cannot use his left hand in writing. Although now past 50 years, he has always hated any writing, the mere act of doing so, and he cannot do any original thinking while writing. He is for this purpose compelled to rely on a stenographer, and then his ideas flow freely and rapidly. If he tries to think, plan or devise and to write at the same time, there is a positive inhibition of thought, and he must make sketches, epitomes, several efforts, copyings, etc., in a painful and most unsatisfactory manner. The attempt at ambidexterity has been a lifelong obstacle to him in his professional progress. The chief centers most closely interrelated in writing and thinking are thus demonstrably better harmonized when in one side of the brain. The mechanics of neurology are plainly less difficult than could be achieved by any foolish and unsuccessful ambidexterity.—Dr. Gould, in Science.

FRUIT PARING MADE EASY.

Little Machine, Invented by New York Man, Peels All Sorts of Things at the Table.

A New York man has just secured patent rights on a machine for paring and peeling fruits and vegetables, which should find its way to the hearts of those who ever have this task to perform. A pair of revolving arms, whose ends are

FRUIT AND VEGETABLE PARER.

fitted with sharp knives, are operated by means of a crank. The article to be pared is held firmly by a pointed shank, and as the knives pass over its surface a clean, even peel is removed. It will thus be seen that, besides doing its work in the most expert manner, and the shortest possible time, there is a great saving in having the peel of regular thickness and without unnecessary waste.